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Washington, D.C. 20231, on September 30, 1992

Date: 9-30-92 By: Donna Magers

PATENT
11509-57-5

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	
Michael C. Pirrung et al.	Examiner: Unassigned
Serial No. --Not Yet Assigned--	Art Unit: Unassigned
Filed: September 30, 1992	
For: VERY LARGE SCALE IMMOBILIZED POLYMER SYNTHESIS	INFORMATION DISCLOSURE STATEMENT

COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

Sir:

The following materials are brought to the Examiner's attention pursuant to Applicants' duty of disclosure under 37 CFR 1.56. No inference should be made that the documents are in fact material or in fact are prior art merely because they are referenced in this Disclosure Statement, nor should any inference be drawn as to the pertinence of the references based on the order in which they are presented.

Applicants have selected most of these references from the references cited in parent application Serial No. 07/492,462, now U.S. Patent No. 5,143,854. The Examiner in the parent application cited additional references against the parent's claims which are believed to be of less relevance. One additional reference (Schnur et al.) was recently issued and has

come to Applicants' attention since allowance of the parent. The Examiner is also invited to review the art cited in the parent application. Applicants note that a related case has been filed on the same day as the present application, with Attorney Docket No. 11509-57-4.

Although Applicants have provided a brief description of the art below, it is requested that the Examiner fully consider the art cited herein and that such art be cited on the front of any patent issuing herefrom. Form PTO-1449 is enclosed herewith.

1. U.S. Patent No. 4,562,157 (Lowe et al.) discusses a field effect transistor in which a biochemical species is attached in selected areas by means of a photoactivatable function. There is no suggestion to form arrays of oligonucleotides in the manner recited.

2. Haridasan et al., "Peptide Synthesis Using Photolytically Cleavable 2-Nitrobenzyloxycarbonyl Protecting Group," Proc. Indian Natl. Sci. Acad., Part A (1987) 53:717-728 discusses NBOC derivatives of amino acids and their use in synthesis but does not suggest a technique for synthesis of diverse oligonucleotides. The reference fails to suggest light-directed techniques of forming arrays, or the resulting arrays.

3. Sze/McGillis, VLSI Technology, Chapter 7, pgs. 267-301, McGraw-Hill, 1983, discuss various lithographic techniques for use in the semiconductor industry. The reference fails to suggest application of the techniques to oligonucleotide synthesis.

4. Geysen et al., "Strategies for epitope analysis using peptide synthesis," J. Immunol. Meth. (1987) 102:259-274, discuss a method and apparatus for synthesis of chemical sequences on polyethylene rods. No suggestion of the light-directed techniques of forming oligonucleotides in the manner claimed is provided, or the resulting arrays.

5. Furka et al., "More Peptides by Less Labour," Abstract No. 288 from Xth International Symposium on Medicinal

Chemistry, Budapest, Hungary, August 15-19, 1988, discuss a mixed peptide synthesis. Light-directed techniques of oligonucleotides in the manner recited are not disclosed, or the resulting claimed arrays.

6. U.S. Patent No. 5,079,600 (Schnur et al.) discusses techniques for forming metal interconnects on semiconductor devices, and fails to suggest many features of the present invention.

7. U.S. Patent No. 5,143,854 (Pirrung et al.) is a parent case assigned to the same assignee.

8. International Publication Nos. WO 89/10977 and WO 90/03382 discuss synthesis and analysis of polynucleotides, but fail to suggest light-directed techniques or an array on a substrate in the manner claimed.

9. Ohtsuka et al., "Studies on transfer ribonucleic acids and related compounds. IX(1) Ribooligonucleotide synthesis using a photosensitive o-nitrobenzyl protection at the 2'-hydroxyl group," Nucleic Acids Research (1974) 1:1351-1357, discuss a method of synthesizing ribooligonuclotide synthesis with a photosensitive group.

10. U.S. Patent No. 4,689,405 (Frank et al.) discusses a method of synthesizing oligonucleotides on a flat support using known oligonucleotide synthesis methods such as the phosphate triester method. Light-directed techniques of oligonucleotides in the manner recited are not disclosed, or the resulting claimed arrays.

The following patent applications are related to the present application and are assigned to the same assignee:

- USSN 626,730, filed December 6, 1990, entitled "SEQUENCING OF SURFACE IMMOBILIZED POLYMERS UTILIZING MICRO-FLUORESCENCE" (Attorney Docket No. 11509-26).

- USSN 624,120, filed December 6, 1990, entitled "VERY LARGE SCALE IMMOBILIZED POLYMER SYNTHESIS" (Attorney Docket No. 11509-28).

- USSN 624,114, filed December 6, 1990, entitled "SEQUENCING BY HYBRIDIZATION OF A TARGET NUCLEIC ACID TO A MATRIX OF DEFINED OLIGONUCLEOTIDES" (Attorney Docket No. 11509-30).

- USSN 796,243, filed November 22, 1991, entitled "VERY LARGE SCALE IMMOBILIIZED POLYMER SYNTHESIS USING MECHANICALLY DIRECTED FLOW PATHS" (Attorney Docket No. 11509-39).

- USSN 796,947, filed November 22, 1991, entitled "METHOD AND APPARATUS FOR MEASURING BINDING AFFINITY" (Attorney Docket No. 11509-46).

- USSN 796,727, filed November 22, 1991, entitled "POLYMER REVERSAL ON SOLID SURFACES" (Attorney Docket No. 11509-51).

- USSN 805,727, filed December 6, 1991, entitled "VERY LARGE SCALE IMMOBILIZED POLYMER SYNTHESIS" (Attorney Docket No. 11509-A-1-1-1).

Also attached are the EPO/PCT Search Report from the foreign counterpart to the parent application, USSN 07/492,462, as well as the US/PCT counterpart's Search Report from related USSN 07/624,120.

A copy of a February 1991 Science paper is also enclosed for the Examiner's consideration. This paper recently won the Newcomb Cleveland Award for the AAAS and describes the technology claimed herein.

Respectfully submitted,
TOWNSEND AND TOWNSEND

Date: 2/20/92

By: _____
Vern Norviel
Reg. No. 32,483

Enclosures:
1. Form PTO-1449
2. Copies of cited references
3. Copy of EPO/PCT Search Report from USSN 07/492,462
4. Copy of US/PCT Search Report from USSN 07/624,120
5. Copy of Fodor et al., Science (1991) 251:767-777

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